

Closing Gaps in Chronic Condition Management and Health Equity



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How Precision Nudging® Creates the Path to Better Care and Reduced Disparities

Chronic condition management and health equity are key focus areas for modern healthcare organizations seeking to improve patient outcomes, reduce costs, and meet value-based care requirements.

These two areas are deeply intertwined. As a result, they can be addressed together with thoughtful behavioral design – a method that applies principles from the fields of behavioral science, psychology, and economics to influence human behavior.

Focusing on the connections between chronic condition management and health equity can accelerate population outcomes and overcome disparities more quickly than a siloed strategy.

One way to do this is through patient communications powered by Precision Nudging, Lirio's unique approach that combines behavioral science and AI to activate and engage consumers.

How chronic condition management intersects with health equity

The state of chronic conditions in the US illuminates the disparities that exist between racial and ethnic groups. There are many nuanced reasons for imbalanced chronic condition outcomes, including:

- historical inequities
- genetic predisposition to chronic conditions among some racial/ethnic groups
- a higher prevalence of social determinants of health (SDOH) that make it difficult to manage chronic conditions in underserved communities.

Additionally, biases in the healthcare system hinder equitable care delivery.

A 2019 study found that an algorithm from Optum contained racial bias by using health costs as a measure for health needs. Because this algorithm predicts healthcare costs rather than treatment needs, the study's authors estimated the racial bias reduced the number of Black patients identified for extra care by more than half.

Due to the impact of chronic condition management disparities, the Centers for Medicare & Medicaid Services (CMS) has passed various legislation to drive better care across populations. Additionally, its [Framework for Health Equity](#) sets the foundation and priorities for driving structural change and eliminating barriers.

Health systems have an opportunity to leverage their patient communication and engagement strategy to advance outcomes for all.

Conventional patient engagement struggles to close gaps

Healthcare leaders generally recognize they need to achieve personalized patient engagement to support chronic condition management, but have not seen success with digital tools that can make this a reality.

For example, a [JAMA Network Open study](#) found that non-Hispanic Black patients were 47% less likely to engage with their patient portals, while Hispanic patients were 34% less likely. [Research suggests](#) that digital determinants of health may prevent patients from underserved groups from fully benefiting from digital health tools.

This digital divide only exacerbates health disparities, bringing to light the importance of [health IT equity](#).

Healthcare organizations have been hesitant to pursue patient engagement solutions because of historical low adoption levels with patient portals and other tools across all populations, and particularly with underserved communities.

Personalization has been used effectively to drive higher return on investment (ROI) via data-driven financial management and to administer highly-tailored treatment via precision medicine, but it's missing in ongoing health interactions and chronic condition management.

To incorporate personalization in these areas, organizations must start focusing on human behavior change.

Spotlight on Cone Health



Organization: Not-for-profit health care network

Location: Central North Carolina

Size:

- 5 hospitals
- 5 ambulatory care centers
- 3 outpatient surgery centers
- 8 urgent care centers
- 120 physician practices

Health Equity Goals:

- Reduce life expectancy disparities in its communities by five years in five years via its Center for Health Equity
- Improve outcomes for patients with chronic conditions such as diabetes and hypertension

The Challenge:

While Cone Health boasted an above-average hypertension control rate, there was a noticeable discrepancy between control levels among white patients (70%) and Black patients (62.5%) – prompting the organization to launch a program aimed at closing this gap.

Introducing Precision Nudging

The healthcare industry needs a new approach to patient engagement that enables better care outcomes for all populations.

Precision Nudging is the answer.

Created by Lirio, Precision Nudging combines behavioral science and AI to help individuals overcome specific barriers to action on their unique health journeys. By applying this approach to communications, healthcare organizations can move patients toward healthy behaviors that improve chronic conditions.

How it works

Lirio's design process is engineered to incorporate a breadth of research that ensures Precision Nudging can serve a diverse patient population.

This allows your organization to begin with a rich understanding of an underserved population and then quickly engage with members of that population on an individualized basis.

Lirio's personalization engine combines behavioral science and AI to create Precision Nudging interventions that activate patients and members via hyper-personalized communications.

1. Lirio's Large Behavior Model (LBM) takes in proprietary health data, including SDOH and clinical history, alongside individuals' communication preferences and interaction history.
2. Lirio's objective-driven AI approach means the LBM is oriented to achieve your organization's population health goals, such as closing gaps in care or facilitating uptake of home health behaviors like monitoring blood pressure.
3. Leveraging a unique behavioral design approach and industry-defining AI, the LBM captures relevant behavioral context that informs Lirio's personalization engine to move individuals toward the defined objectives.
4. The personalization engine delivers intervention-based personalized behavioral communications supported by the LBM and based on the top-priority target behavior, communication channel, timing, behavioral science strategy, and content that will be most effective at driving outcomes for each individual.
5. The engine automates personalized communications at enterprise scale – via flexible deployments and integrations – so you reach entire populations.

Overcoming barriers with personalization

Cone Health began working with Lirio to reach unengaged populations, re-establish trust, and encourage patients to engage with the health system and pursue healthy behaviors that drive wellness and longer life expectancy.

This included implementing the Lirio personalization engine and deploying Precision Nudging interventions focused on improving chronic condition management.



Behavioral Intervention Approach:

- The interventions were informed by Lirio's behavioral logic models which document the determinants of behaviors such as provider visits, monitoring blood pressure and blood sugar at home, and taking medications as prescribed.
- Precision Nudging interventions combine personalized communications that address barriers to action using behavioral science with a just-in-time adaptive intervention (JITAI) design that adapts to patient habit formations and evolving needs. Together, these approaches help patients sustain condition management behaviors beyond the provider encounter.



Designed for a Diverse Population:

- Knowing Cone's patients represent diverse racial, ethnic, and cultural groups, intervention design accounts for barriers that are related to these factors and other social determinants of health (SDoH).
- Because Cone Health's patient population includes members of underserved groups with limited access to connected devices and lower health literacy and numeracy, the technological approach was selected to align with the tools patients have access to and are comfortable using.



Personalized Content Selection:

- The data associated with each individual informs the selection of Precision Nudging messaging for each target behavior based on their likelihood to engage and, ultimately, take action.



Continuous Learning:

- Over time, Precision Nudging becomes increasingly personalized as repeated interactions inform a representation of the patient across time and contexts. This results in fast, effective personalization.

The power of Just-in-Time Adaptive Interventions

The behaviors that have the biggest impact on chronic condition management happen outside of the care facility. An effective condition management intervention therefore must go beyond connecting patients with care to supporting them in lifestyle changes, medication adherence, and symptom monitoring.

With a Precision Nudging approach to communications, your organization can move patients to take incremental small steps that reinforce positive habits and overcome negative habits associated with chronic conditions.

This is possible with Just-In-Time Adaptive Interventions (JITAs). JITAs provide real-time behavioral support in the moment of action. Nudges are timed to arrive when an individual has an opportunity to take an action, like measuring blood pressure at home, or avoid an action, like smoking.

The nudge timing and content adapt based on behavior to offer just-right levels of support, which may mean more frequent prompts for new or challenging behaviors, and a lighter touch for more established habits.

Lirio can reinforce providers' recommendations for lifestyle changes to manage chronic conditions by offering the right mix of nudges based on the patient's health history and needs.

Enabling holistic chronic condition management

Often patients have more than one chronic condition. For example, over half of people with diabetes in the United States also have comorbid hypertension. And, many of the same behavior changes can support management of multiple chronic conditions.

This means focusing on just one chronic condition is not enough. Instead, healthcare organizations need to leverage solutions that understand the full picture of each individual in the population.

Patients are also more than the information in their medical records. Many tools have fallen short because they focus on a clinical to-do list without considering who patients are outside of their diagnoses. Not only do polychronic patients manage two or more health conditions, they also raise families, work for a living, and have goals, fears, preferences, and habits.

A successful condition management approach considers the person holistically beyond their condition list and learns and adapts to their needs.

Through the application of Lirio's personalization engine and LBM, your organization can adopt a holistic view of patients with chronic conditions to determine underlying causes that can be addressed at home with the right message at the right time – leading to equitable outcomes across populations.

Better care outcomes at Cone Health

In addition to using Precision Nudging to prompt patient engagement with condition management behaviors, Cone Health also partners with community organizations to help address health barriers outside the four walls of the hospital, including employment, housing, and food access.

Through these efforts, the health system has connected new patients from un-engaged areas with the resources they need – establishing the foundation for trusted relationships that help reduce outcome disparities.

Cone Health's commitment to connecting patients with needed resources and support aligns with Lirio's mission to create frictionless action paths for patients in order to achieve better health outcomes.

Lirio's ongoing partnership with Cone Health applies personalized behavioral science across the organization with goals including reducing unnecessary emergency department utilization, increasing primary care engagement, and exceeding quality metric targets for chronic conditions among all patients.

Why partner with Lirio?

Most technology solutions fall short in driving better outcomes and cost savings via personalized engagement because they don't focus on the unique behaviors of each individual in a population.

For example, while large language models (LLMs) can support patient engagement efforts, they cannot help organizations effectively move people to take specific actions that lead to better health outcomes. This is because language is only part of the equation; understanding human behavior is the rest.

Organizations that embrace behavior change to usher in a new era of patient engagement will be well-positioned to lead their communities to better health.

You need a partner who can help you navigate this paradigm and achieve your health equity and chronic condition management goals.

That's why we developed the world's first LBM for healthcare, pioneering the bridge between behavioral science and AI and powering our Precision Nudging approach.

Lirio makes it possible to orchestrate health journeys in a way that accounts for individual differences and optimizes for health outcomes specific to their unique barriers.

Simplified implementation

Lirio's personalization engine, Large Behavior Model, and Precision Nudging interventions operate within a HITRUST-certified and SOC II Type 2-compliant framework to ensure your patient data remains secure throughout.

We offer flexible deployment options and integrations, layering into your existing systems so you can maximize the value of your technology investments. We make interoperability seamless for your organization.

Better health outcomes for all

Health systems that leverage Precision Nudging to drive equitable outcomes among patients with chronic conditions can expect improvement across a range of care metrics, including medication adherence, no-show rates, patient satisfaction, and more.

Ultimately, this can lead to lower mortality rates and reduced costs overall.

- Chronic diseases are among the leading causes of death in the United States with heart disease and cancer alone accounting for around 38% of all deaths.
- Because chronic and mental health conditions make up 90% of the nation's \$4.1 trillion in annual healthcare expenditures, healthcare organizations have the potential to achieve significant cost savings from improved chronic condition management.

Lirio understands the ripple effect that holistic chronic condition management can have on population health, and we work with organizations to create engagement strategies that align with their long-term goals.

Learn more from Lirio

[Contact us](#) to schedule a demo and see how Precision Nudging can work for your organization.



To learn more about how Precision Nudging helps healthcare organizations improve health equity through chronic condition management watch a panel discussion between Cone Health's Chief Nursing Officer, Dr. Vi-Anne Antrum, RN, FACHE, and Dr. Amy Bucher, Ph.D., Chief Behavioral Officer at Lirio.

They share about how Cone Health leveraged its existing health equity framework and partnered with Lirio to reach unengaged populations and improve outcomes for patients with hypertension.

[WATCH THE PANEL](#)